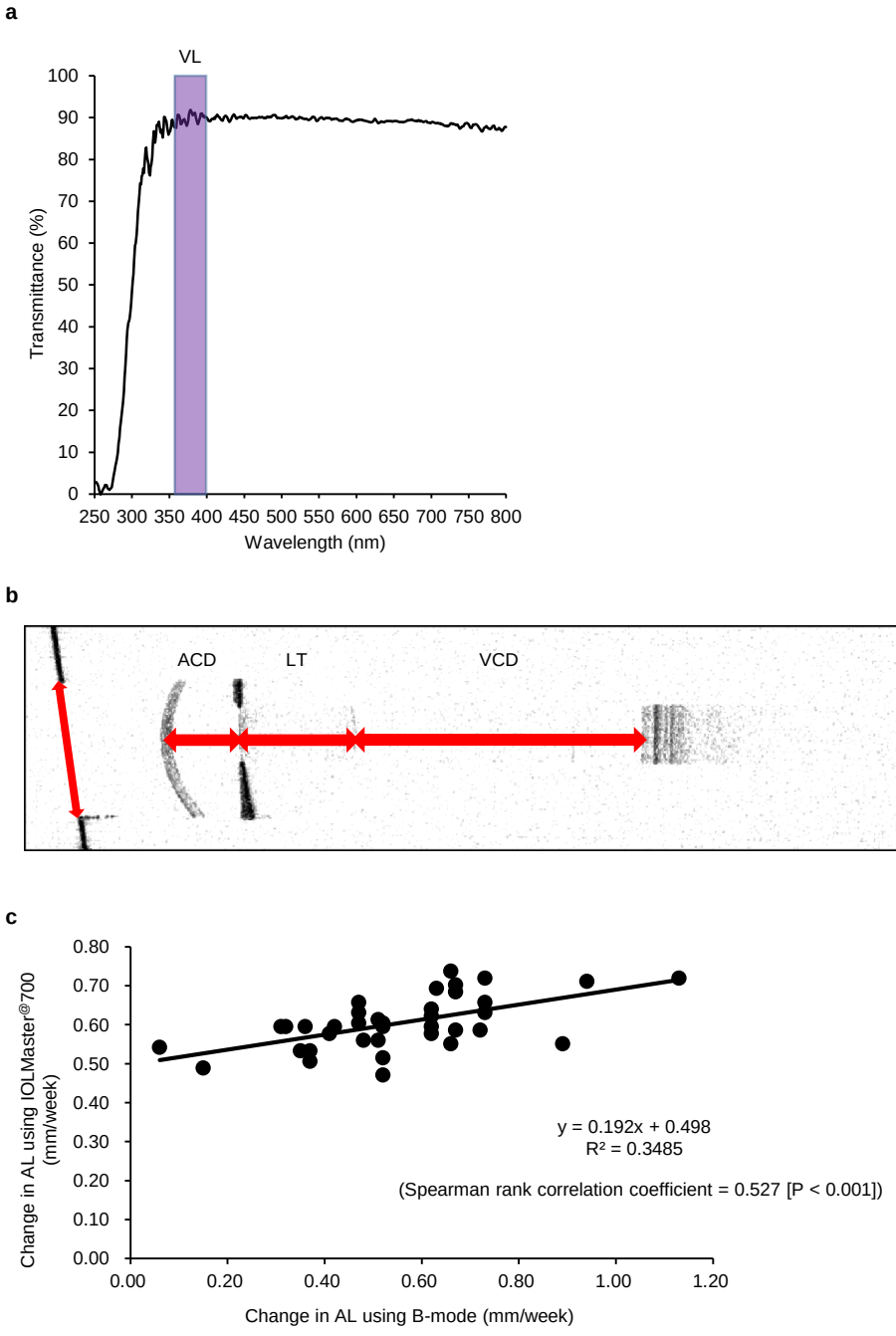

Fig. S1. Biometry of chick eyes with the transparent glass goggle by latest clinical devices. (a) Spectral transmission of the glass goggle. Almost all violet light was transmitted. VL, violet light. ***(b)*** Measurement of full-eye-length swept-source optical coherence tomography (SS-OCT) scan biometry using IOLMaster® 700 (Carl Zeiss Meditec, Jena, Germany). Left side scale is 3.60 mm which is measured using digital caliper. ACD, anterior chamber depth. LT, lens thickness. VCD, vitreous chamber depth. ***(c)*** There is a significant ($P < 0.001$) correlation between the changes in AL measured by B-scan ultrasonography and AL measured by full-eye-length SS-OCT scan biometry IOLMaster® 700 (Carl Zeiss Meditec) in a preliminary chick experiment (n = 37). AL, axial length.

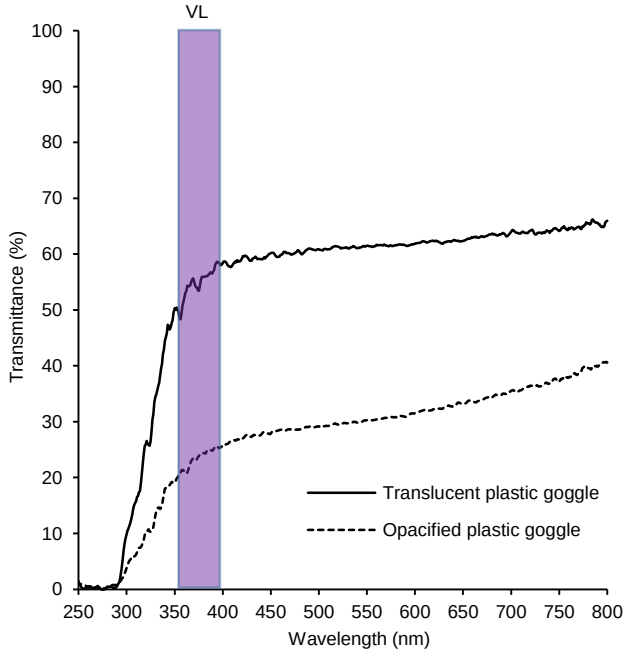

Fig. S2. Plastic goggle covered chick eyes. Spectral transmission of the two plastic goggles. Transmittance of violet light (VL) in translucent plastic goggle is almost two-thirds of transparent glass goggle (Fig. S1a). Transmittance of VL in the opacified plastic goggle is almost half of the translucent plastic goggle. VL, violet light.

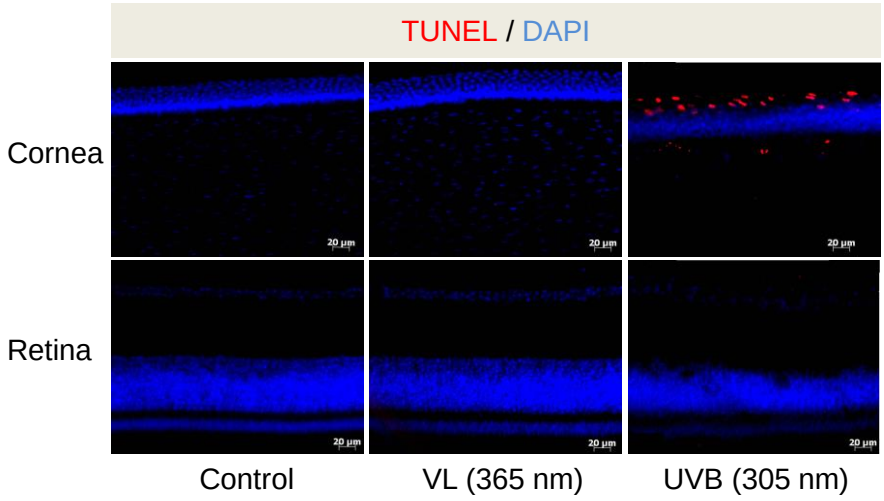

Fig. S3. TUNEL-DAPI staining chick corneal and retinal sections. Nuclei are stained with DAPI (blue), and apoptotic bodies are stained with TUNEL (red). Note that TUNEL-positive cells are observed in corneal epithelium and stroma, but not in the retina by ultraviolet (UV) B (around 305 nm light) irradiation. VL (around 365 nm light) irradiation induces no apoptotic cells in ocular tissue. VL, violet light. UVB, ultraviolet B light. Scale bars = 20 ㎛.

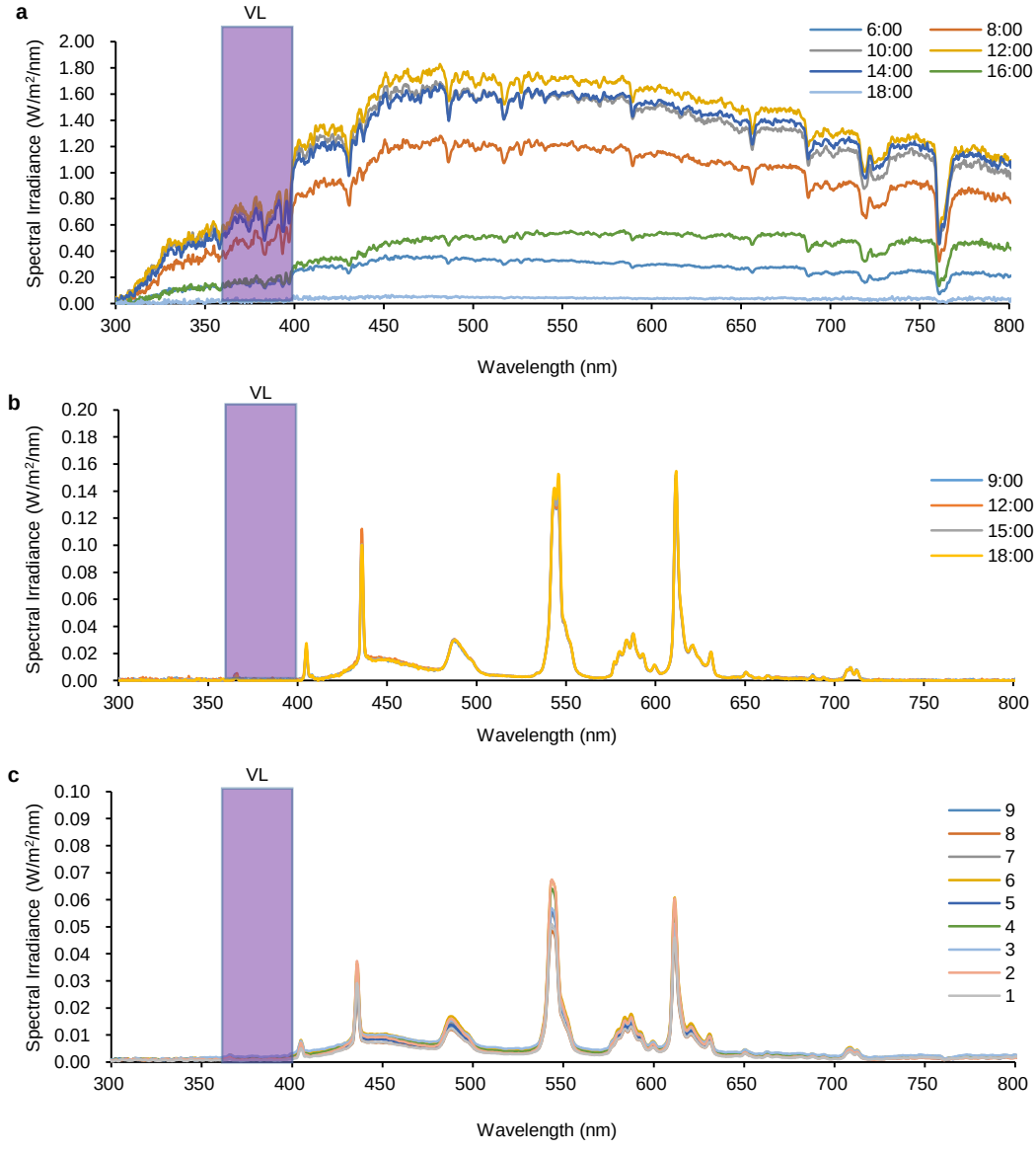

Fig. S4. Abundant violet light (VL) outdoors and slight VL indoors in our modern society. (a) The spectral irradiance data outdoors at various times recorded in Japan. VL was abundant at all time points except for 18:00. The data for 6:00, 8:00, 12:00, 14:00 and 16:00 were collected on May 26, 2015. The data for 10:00 were collected on June 1, 2015. The data for 18:00 was collected on May 31, 2015. All the data were collected in sunny days at Shinjuku, Tokyo, Japan using a spectrometer, UVNb-50 (StellarNet Inc.). The probe of the device was directed straight upward at the height of the human eye (about 1.6 m from the ground). ***(b)*** The spectral irradiance data indoors at various times in a windowless room. All data were collected on June 9, 2015 in a windowless room at Keio University, Tokyo Japan. No obvious change in spectral irradiance could be detected at different time points, and almost no VL was detected. **(c)** The spectral irradiance data indoors in various seat positions (1-9, equal intervals) in the classroom with some windows. All data were collected on May 22, 2015 in a classroom at Keio University School of Medicine, Tokyo Japan. No obvious change in spectral irradiance was detected at different seat positions, and almost no VL was detected. The probe of the device was directed straight forward towards the blackboard at the height of the human eye while seated. VL, violet light.

Table S1. Violet light (VL) exposure to the eye suppressed axial length elongation in children: Comparing children who wore non-VL transmitting eyeglasses and VL transmitting contact lenses (CL).
(*a*) Patient background data: VL (-) eyeglass group (n = 211), the patient group who wore non-VL transmitting eyeglasses; and the VL (+) CL group (n = 99), the patient group who wore VL transmitting CL. There was no significant difference in the period of observation between the two groups. SD, standard deviation. Data were analyzed using the Mann-Whitney *U* test.
(b) Stepwise multiple regression analysis of the axial length elongation in 310 patients. The initial axial length was not entered as a variable, using a *P* of < 0.05 for entry.
(c) VL (-) eyeglass type and patient number (n).
(d) VL (+) CL type and patient number (n).

a

Parameter	VL (-) eyeglass group (mean ± SD) (range)	VL (+) CL group (mean ± SD) (range)	*P* value
Number of cases	211 cases 211 eyes	99 cases 99 eyes	-
Race	All Japanese		
Age（years）	12.2 ± 1.7 (10～15)	13.9 ± 1.1 (10～15)	< 0.001
Non-cycloplegic objective refraction （diopter）	-3.46 ± 1.55 (-1.00～-9.13)	-2.58 ± 1.63 (-1.00～-8.75)	< 0.001
Axial length（mm）	24.85 ± 1.08 (22.26～28.77)	25.52 ± 1.01 (23.37～28.08)	< 0.001
Period of observation (day)	976 ± 466 (368～2548)	1036 ± 439 (385～2016)	0.265

b

Variable	Coefficient	Standard error	*P* value
Age (years)	-0.028	0.004	< 0.001
Type of lens (non-VL transmitting eyeglasses = 0, VL transmitting CL = 1)	-0.034	0.014	0.016
Sex (male = 1, female = 2)	-0.028	0.012	0.018
Overall $R^2 = 0.247$			

c

VL (-) eyeglass type	n
NULUX 1.6 (HOYA)	2
REMARK 1.6 (HOYA)	23
SL 82 (HOYA)	13
SELUX 903 VS (HOYA)	17
SELUX 982 (HOYA)	56
BELUNA ZX-AS UV (Tokai)	72
BELUNA HX UV (Tokai)	8
BELUNA LIBERTY　EX-AS 1.76 (Tokai)	4
REMARK TF 1.6B (HOYA)	2
EXTENSION RE 1.6A VP (HOYA)	1
HILUX1.6 (HOYA)	6
NULUX 1.67 (HOYA)	3
EXTENSION RE 1.67B VP (HOYA)	2
Other (MR8)	2
Total	211

d

VL (+) CL type	n
2WEEK Menicon PremiO（Menicon）	20
Miru 1day Menicon Flat Pack（Menicon）	26
Miru 1day Menicon toric（Menicon）	33
Miru 1month Menicon（Menicon）	6
2WEEK Menicon PremiO Toric（Menicon）	7
Miru 1month Menicon toric（Menicon）	7
Total	99

Table S2. Violet light (VL) exposure to the eye suppressed axial length elongation in children: Comparing children who wore partially VL-blocking contact lenses (CL) and VL transmitting CL.
(a) Patient background data: The partially VL-blocking CL group (n = 31), the patient group who wore partially VL-blocking CLs; and VL (+) CL group (n = 116), the patient group who wore VL transmitting CLs. There were no significant differences in age, non-cycloplegic objective refraction, axial length, or period of observation between the two groups. SD, standard deviation. Data were analyzed using the Mann-Whitney *U* test.
(*b*) Partially VL-blocking CL type and patient number (n).
(c) VL (+) CL type and patient number (n).

a

Parameter	Partially VL-blocking CL group (mean ± SD) (range)	VL (+) CL group (mean ± SD) (range)	*P* value
Number of cases	31 cases 31 eyes	116 cases 116 eyes	-
Race	All Japanese		
Age（years）	14.7 ± 1.3 (13～18)	15.1 ± 1.4 (13～18)	0.105
Non-cycloplegic objective refraction （diopter）	-2.59 ± 1.71 (-1.00～-6.38)	-2.47 ± 1.72 (-1.00～-9.38)	0.721
Axial length（mm）	25.63 ± 0.70 (24.22～26.88)	25.76 ± 0.99 (23.40～28.10)	0.551
Period of observation (day)	892 ± 374 (372～1645)	872 ± 361 (380～1814)	0.833

b

Partially VL-blocking CL type	n
1-DAY ACUVUE® (Johnson & Johnson)	1
1-DAY ACUVUE® DEFINE® MOIST® (Johnson & Johnson)	1
1-DAY ACUVUE® TruEye® (Johnson & Johnson)	2
1-DAY ACUVUE® MOIST® (Johnson & Johnson)	16
1-DAY ACUVUE® MOIST® Brand Contact Lenses for ASTIGMATISM (Johnson & Johnson)	1
ACUVUE® 2® (Johnson & Johnson)	1
ACUVUE® ADVANCE® (Johnson & Johnson)	1
ACUVUE® OASYS® (Johnson & Johnson)	4
ACUVUE® OASYS® Brand Contact Lenses for ASTIGMATISM (Johnson & Johnson)	2
Menicon tinu（Menicon）	2
Total	31

c

VL (+) CL type	n
2WEEK Menicon PremiO（Menicon）	26
Miru 1day Menicon Flat Pack（Menicon）	25
Miru 1day Menicon toric（Menicon）	41
Miru 1month Menicon（Menicon）	5
Focus® DAILIES (Alcon)	1
2WEEK Menicon PremiO Toric（Menicon）	8
Miru 1month Menicon toric（Menicon）	10
Total	116